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ABSTRACT

The Assessing Quality on Digital Reference team conducted two site visits at Florida Libraries in August 2001. The objectives of these visits were to: document how digital reference services are currently being planned for, delivered, and evaluated in libraries; understand how "quality" in digital reference is defined in these environments; identify current issues in the provision of digital reference surrounding technology, management, staffing and training, and costing and economic concerns; and determine the evaluation needs of libraries regarding digital reference services. Data were collected in in-depth interviews with key informants at each library. Each library chose the personnel they felt could best inform the research, typically including both managerial and professional perspectives. Each library received a copy of the questions to be covered in the interview in advance of the site visit and each was well prepared to meet with the interviewers. In addition to the pre-formatted questions, interviews included opportunities for respondents to raise issues and add topics to the agenda. In the course of these interviews several trends were documented that are developing as a common thread in the academic literature and in data gathered on site visits at libraries across the United States. Provided here are the site visit reports concerning the provision of digital reference services at the State Library of Florida, Bureau of Library and Network Services and the Tampa-Hillsborough County Public Library System. These reports are followed by a description of how these findings fit into a larger effort to assess the quality of digital reference, produce evaluation tools, and determine how best to integrate evaluation efforts into digital reference services. (AEF)

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Assessing Quality in Digital Reference Services Site Visit Reports: State Library of Florida, Bureau of Library and Network Services and Tampa-Hillsborough County Public Library System

August 30, 2001

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The Assessing Quality on Digital Reference team conducted two site visits at Florida Libraries in August 2001. The objectives of these visits were to:

- Document how digital reference services are currently being planned for, delivered, and evaluated in libraries.
- Understand how "quality" in digital reference is defined in these environments.
- Identify current issues in the provision of digital reference surrounding technology, management, staffing and training, and costing and economic concerns.
- Determine the evaluation needs of libraries vis-à-vis digital reference services.

Data were collected in in-depth interviews with key informants at each library. Each library chose the personnel they felt could best inform the research, typically including both managerial and professional perspectives. Each library received a copy of the questions to be covered in the interview in advance of the site visit and was well prepared to meet with the interviewers. In addition to the pre-formatted questions, interviews included opportunities for respondents to raise issues and add topics to the agenda.

In the course of these interviews several trends and issues were documented that are developing as a common thread in the academic literature and in data gathered on site visits at libraries across the United States. These are:

- Many digital reference services have grown organically out of the library's perceived need to provide digital reference service and not as the result of detailed planning.

- The volume of digital reference questions is generally low, but can be increased with outreach efforts and the increased visibility offered by advertising and formal marketing efforts.
- The low volume of questions has kept the need to address many management, staffing, and training issues at bay. If these services are expanded, these issues will come into focus and formal policy, procedure, and evaluation strategies will be needed to support them.
- Libraries continue to be concerned about the need to provide reference services 24 hour a day, seven days a week. It is valid to question whether this service is necessary for every library type and whether the library's designated user group or service area will in fact benefit from it.
- Many predict future movement toward increased accountability in providing costing data on a program basis. To do this libraries will need to develop new ways of apportioning costs and benefits if digital reference services are to be accurately described.
- Efforts at evaluating digital reference have been limited and rudimentary. Emphasis has been on volume statistics and the need to measure user satisfaction. Evaluation plans need to be formalized and new metrics and measures developed to allow for the appropriate evaluation of digital reference services in libraries.

Provided here are the site visit reports concerning the provision of digital reference services at the State Library of Florida, Bureau of Library and Network Services and the Tampa-Hillsborough County Public Library System. These reports are followed by a description of how

these findings fit into a larger effort to assess the quality of digital reference, produce evaluation tools, and determine how best to integrate evaluation efforts into digital reference services.

State Library of Florida, Bureau of Library and Network Services
Digital Reference Site Visit
August 14, 2001

Introduction

Project team members Melissa Gross and Ruth Hodges conducted a site visit on August 14, 2001 at the State Library of Florida, Bureau of Library and Network Services. In-depth interviews were held with the Bureau Chief and the Head of Information Services.

Access to the State Library of Florida's email reference service, Ask A Librarian, is available on almost every page of the library's web site. The address for the main page is: http://dlis.dos.state.fl.us/stlib

A variety of internal documents relating to the email reference service were provided to the interviewers. These include copies of the:

- Reference Survey Evaluation form used by the Bureau to evaluate customer satisfaction.
- *Florida Statute 257.261* concerns the confidentiality of customer records.
- *Public Service Measures 2000-2001.*
- Copies of the main page and sample questions from the *Reference Desk Transaction Database* a tool developed and used by staff to save model and difficult questions.
- Sample records.
- A memo describing the performance standards for digital reference.
- Samples of publicity materials.
- The completed *Question Guideline* form that was sent to liaisons prior to site visit was collected.
- Current draft, *Email Reference Procedures Manual*

All documents related to this site visit are on file at FSU.

Selected Notes and Issues

The State Library has provided email reference services since 1996. Ask A Librarian initially started as a link at the bottom of the State Library's Government Information Locator Service (FGILS) web page. Since that time, the volume of electronic reference questions received has grown from 3,292 logged in 1997-1998 to 8,931 received in 2000-2001. The library currently receives and processes 400+ electronic reference questions per month.

The volume of questions tends to increase during legislative session and to decrease during the summer when school is out. For about a half a year the searchable data base component of the Florida Government Information Locator Service was linked to MyFlorida.Com and served as their search engine. During that period the Ask A Librarian service had a high level of visibility and the volume of questions received increased to over three times the normal load. Many of the questions received were specific to the MyFlorida.Com web site. When this relationship ended, the volume of questions returned to the normal 400-500 questions-a-month range.

The library accepts all questions. When necessary, they will provide the requester with contact information to other agencies, institutions, etc. The library provides both fax (not as prevalent as email) and email information. Long distance users with lengthy calls are referred to the Ask A Librarian service. The library views email and face-to-face reference as being essentially the same service. They feel the professional skills the librarian needs are the same for both and their experience is that the time and effort to respond to email questions is similar to the time and effort required in traditional reference.

Currently, the library has no formal, separate objective for providing digital reference. It is fully integrated into their concept of what reference entails in this environment. The library

developed Ask A Librarian as a response to developing technology. As a result, no needs assessments were conducted prior to offering it. Currently, there are no written policies or procedures for services but the library is in the process of developing policies based on past examples used.

Digital Reference Process

Two different web forms are provided on the web site for Ask A Librarian services: one for use by the general public and one specifically for employees of the State of Florida. Questions can also be submitted through a direct email address. The library considers the state of Florida employees as its primary clientele and makes special efforts to serve this group.

Incoming questions are received at a general email address and then divided evenly among librarians and assigned at random, irrespective of whether questions are easy or hard. Some questions may be given to librarians with particular expertise or to librarians specifically requesting a question(s), but this is the exception. Librarians use print based resources, special collection materials, and electronic resources to respond to email reference questions.

The turnaround time for questions per policy is three days. The actual time is usually less; some questions can be answered very rapidly using the *Transaction Database*. The Transaction database is a product developed and maintained by the librarians. It is used to archive previously asked questions that they wish to maintain access to. These are model question answer sets, questions that were difficult to answer, and frequently asked questions. This database can be searched to find answers to incoming questions, and is used to update the FAQ page. There are currently between 750 and 1,000 questions in the database. The librarians also have access to the sent file in Microsoft Outlook (the email software used for the service) if they wish to search there for a previously answered question.

The Ask A Librarian Service is offered in English only. It does not include any special user training or orientation.

Marketing

As stated above, Ask A Librarian is very visible on the library's web pages. It is also actively promoted and publicized using both traditional library promotion strategies (such as the development of brochures), and in ongoing outreach efforts. One of their promotion strategies was the development of a CD-ROM give-away that won the LAMA PR All Star Award in June 2001.

There are two state agency liaisons charged with outreach as part of their regular duties. These employees make visits to the various government agencies to raise their awareness of the library's services (including email reference) and attend the annual orientation of the legislature. In addition, they staff a library booth at the Florida Library Conference and the local Technology Conference, held in Tallahassee annually in September at the Civic Center. They also conduct outreach from a booth in the capital during Library Day.

Digital Reference Desk Users

Although Ask A Librarian is available to the general public, the library views its primary obligations first to the state of Florida employees, second to state (public) libraries, and third to the general public. In providing these services, the library does not limit services to users by password, account, library card, or membership. Although the library does not reject non-affiliated users, it is primarily interested in answering questions that pertain to its special collections and the State of Florida. To this end, they do encourage the public to use their local library first, and a link to a list of Florida public libraries is provided on the State Library of Florida web site.

As indicated by the two web forms used for submitting questions, the library is especially concerned about tracking its primary user group, state employees. Their questions are analyzed to determine which agencies use the services and what parts of the collection they may want to know more about. This information is used to design future outreach programs. The *State of Florida employee's* web form collects the name of the agency; user name, various contact and mailing information; subject of search; place for request(s); and date needed. The *general public's* web form collects contact information, subject of search, and the question itself. Both web forms stress the importance of providing a telephone number in addition to an email address for the library to respond to. This is because the email addresses submitted are not always functional and because, if the nature of the question is complex or if a reference interview is needed, the librarian may elect to call the user to save time.

To deal with privacy issues, library staff never forwards requests to other agencies or departments in state government, but instead provides users with specific contact information, so that they can do so directly if they wish to continue to pursue the information. This is done to comply with the Florida Statute 257.261 FS that guards privacy and confidentiality of user registration and circulation records.

Evaluation

A quarterly survey (*Reference Survey* form) is used to measure user satisfaction with reference services in general. This survey is interested in whether the information users receive is at or above their expectations, whether they receive help in a timely manner, and asks users to rate staff service behaviors on several dimensions (available, helpful, effective, courteous, understands the question). If the response to their question was a referral, the survey asks whether an appropriate referral was made, and lastly, the survey asks users to rate their overall

experience and the quality of the service. Users are asked to rate these dimensions as *Poor, Fair, Good, Excellent,* and *No Opinion*. The library does not collect information on user return rate or the number of new users.

An email link is provided on all of the library's pages soliciting user comments about the library's web page and services. To date, the emails received via this link have been most helpful to the library in terms of helping them identify what they call "information literacy opportunities," where users make them aware of other resources, but tend not to provide feedback about current services. Users mainly use the comments to report broken links, make solicitations for business opportunities with the library, and to voice complaints about government. Reference questions are occasionally submitted through this link and these are forwarded to the reference for handling.

The main statistic the library collects is the total number of questions answered. They say that 100% of questions are answered. They do not do a formal assessment of the percent answered correctly, but the supervisor reviews the question/answer sets for accuracy and completeness as part of employee assessment.

The interviewees expressed interest in categorizing questions by type (ready reference, research, etc.). The number of hits to the web site is currently being captured, but the library is also interested in knowing how many people view its web site and find what they want without having to engage the Ask A Librarian service for assistance. They are not particularly interested in demographic data.

During the next legislative session, the library is planning to conduct a focus group to get feedback on new wireless access to the library's web page that is currently under development.

They want to target their frequent users to find volunteers to test and refine this new mode of service delivery.

Digital Reference Service Staffing and Training

The reference desk is staffed nine hours a day from 8:00 a.m. to 5:00 p.m. Monday through Friday and Saturday from 9:00 a.m. to 3:00 p.m. (email questions are answered on Saturday only as time permits). All reference librarians answer both traditional and email reference questions. There is no separate digital reference staff, but only librarians with at least one year of reference experience are asked to perform reference via email.

Newly hired librarians are trained to perform email reference as part of their general training and orientation process. Orientation lasts for several months. During this time the new librarian sits with an experienced librarian at the reference desk and their email question and answer sets are reviewed and commented on until the librarian is ready to go solo.

Reference performance is measured and evaluated as part of the duties of the reference librarian. That is, librarians have an annual performance appraisal where accuracy and completeness in answering questions are reviewed. The determination of what accuracy and completeness means is somewhat subjective, but librarians are provided with model answers and have access to the question/answer sets of their peers. Librarians are aware of the performance standards and expectations. All librarians are expected to answer email reference questions in three days or less and to answer all of the email reference questions they receive.

Economic/Cost Issues

There is no separate budget line established for email reference. Reference services at the State Library are supported with state funds and the cost of reference is not isolated or separately accounted for. Funds are apportioned under headings like "materials" or "personnel"

and not by service or program. Perhaps because of the way funding is handled, the library has not investigated the question of what a reference transaction costs. Thus, there are no statistics kept or measures employed to determine cost effectiveness and/or to perform a cost/benefit analysis.

Some library goals are tied to its budget in order to meet Performance Based Budgeting requirements. These goals tend to be things like number of items circulated, number of reference questions answered, and reports of user satisfaction. This makes it clear why statistics on volume and the quarterly user satisfaction survey are so important. Meeting and exceeding these goals can be rewarded and currently the library is using funds gained this way to extend service hours. There have been no noticeable effects of providing email reference on other library expenditures. During the period when volume tripled, OPS money was available to hire two students for fall term to pick up the overload.

Technology

Hardware/software needed to support DR service include: Microsoft SQL version 7.0, ColdFusion Professional Server 5.0, TextPad Editor, Dell PowerEdge 2300 Server (housed at the State Library of Florida), and Microsoft Outlook and additional web pages hosted on servers at the Department of State Central Computing Facility. Generally, the library appears satisfied with the email technology they are using. Hardware/software needed to access DR service includes a browser, PC, and email access.

Upgrades or changes in hardware/software are in the works only in the sense that the library's technology needs are a part of the Division's long-range technology plan. The library has investigated using chat software to provide digital reference, but they are not convinced that it will add any real value to what they do. Because of the nature of the users they serve, they

have let go of the idea that they need to provide 24/7 services, especially since they do not have 24/7 access to their own building and facilities.

Library staff are currently involved in developing access to the library's website using wireless markup language (WML) and instant messaging. Their vision is that when the Legislature is in session, legislative aids and others should be able to access the library's databases and reference services from the floor using their PDAs. Although customers have not asked for wireless service, the library views having the capability to do this as being proactive. They are planning to use focus groups during the next legislative session and perhaps survey them as they begin to use the product.

As with the development of email reference in this environment, this service is being generated out of the interests and creativity of current staff working without a separate budget in an exploratory plan that is dependent on the staff's own motivation and the eventual responses of the target users.

Tampa-Hillsborough County Public Library System
Digital Reference Site Visit
August 22, 2001

Introduction

Team member Melissa Gross conducted a site visit with library staff at the Tampa-Hillsborough County Public Library System on August 22, 2001. Interviews were performed with the Supervisor of the Electronic Reference and Information Department (ERI), the Principal Librarian from Training and Service Development, and the Principal Librarian from Materials Services. An additional telephone interview was performed with the director of the library on July 13, 2001.

The afternoon of the site visit included a tour of the Electronic Reference and Information Department and informal observation and interaction there.

Access to the QuickAnswers! Service is from the library's home page at: http://www.thpl.org/ from the QuickAnswers! information page http://www.thpl.org/thpl/eri/, or it can be directly accessed at: http://www.thpl.org/thpl/webmaster/forms/askalibrarian.html for web form submissions or via email directly to answers@thpl.org.

Also available online are two sites that provide information about QuickAnswers!, the QuickAnswers! Information Page at:http://www.thpl.org/thpl/eri/ and the Ask-A-Librarian Tips page (http://www.thpl.org/thpl/eri/askalibrarian_tips.html) that outlines policy and procedures for the service.

A variety of internal documents on training for digital reference, personnel evaluation, and internal procedures were provided to the interviewer. These are currently on file at the Florida State University and include:

- QuickAnswers! data sheet.

- Canned comments and responses the librarian's use in composing reference responses.
- ERI Training Program Sheets.
- Guidelines for answering email questions (includes issues of format, content, and style).
- Instructions for answering questions submitted through the E-Library kiosks.

The supervisor of ERI offered to photocopy and send one year's worth of statistics describing the volume and question type of email reference queried received in the first year of the service. When this data is received it will be reviewed and filed with the other materials pertaining to this report.

Selected Notes and Issues

QuickAnswers! is a centralized telephone and email reference service serving the entire Tampa-Hillsborough County Public Library system. It is physically located at the John F. Germany Public Library and maintains the same hours of service as the public library (Monday through Thursday 9 am- 9pm, Friday 9 – 6, Saturday 9-5, and Sunday 10 –6). The emphasis of the site visit was on the provision of email reference service and not on the call center approach to telephone reference. This section overviews the background and operation of this service to date. This service appears to be entering a phase where it will be considering new delivery modes and methods of evaluation, but these are largely externally driven, either by mandates from the county or by participation in consortium agreements.

QuickAnswers! Background

The QuickAnswers! email reference service is about two years old. It was developed to funnel patron emails away from the web master, who was redirecting these email requests to the reference librarians. It is clear that the service was thought through and carefully planned, but the person in charge of this effort left the library before the service was launched and no documentation from the initial planning is currently available. Analysis of the web form interface indicates that the person who designed this service was thinking about evaluation issues. The web form asks detailed questions about the users including name and email address, where they live, their ages, which library they use, grade level (if student), what type of question they have, sources they have already consulted, whether they are repeat users, and the text of their question.

Unfortunately, if an evaluation plan for the service was developed initially it has been lost and no formal evaluation of the service has been performed since its inception. Sadly also, the data bank of question and answer sets collected over the past two years are unavailable for analysis as the Electronic Reference and Information Department (ERI) routinely deletes them in an effort to "protect user privacy." In what seems a somewhat contradictory move, the ERI is currently deleting the user's questions, but preserving their email addresses in anticipation of performing a user satisfaction survey. Other libraries documented in the literature routinely preserve their question/answer sets and remove all identifying information in order to preserve confidentiality.

The collection of statistics has been fairly rudimentary. Volume (number of questions) is tracked and for a short period of time some effort was put into analyzing question type in order

to inform collection development efforts. When system wide reporting standards changed, this analysis stopped.

Email Based Reference Services

Email reference questions may be submitted either via web form on the library's web site or by using a direct email address. There are also several E-Library kiosks in areas not served by branch libraries and these kiosks provide reference service to users through the library's web page. Questions received through the email address do not include the demographic or other information requested on the web form. The department supervisor estimates that about 10% of the email questions are received this way. Pine email is the standard for the county and there are no plans currently to upgrade this software. The library reports being fairly satisfied with Pine except that it is difficult to send attachments using this software and it hampers their ability to use attachments to send information back to users. This situation is somewhat ameliorated by the facility in several of the subscription databases the library uses to email articles directly to patrons from the databases.

All email questions are received by ERI at one email address and then the system distributes them to all of the ERI librarians. ERI librarians are expected to read all incoming questions and to review all outgoing answers. They "claim" the questions they want to work on informally and verbally among themselves. In some cases, more than one librarian will work on a question, especially if it is difficult or research oriented.

Evaluation

ERI receives 100-120 email questions a month. Volume is tracked by one of the ERI librarians who is designated to keep all the question/answer sets that accumulate during the month and to count them up before deleting them. Of the total number of questions received, the

supervisor estimates 10-15% are repeat users and roughly 1/3 come from out of state. (These are general estimates based on his "sense" of the email activity.)

The official turnaround policy for email reference is 24 hours, but in most cases it is actually 3-4 hours. Both print based and electronic resources are used to respond to queries. The ERI supervisor says that every question receives a response. There is no calculated percent of correct answers; rather quality control is inherent in the peer review process that includes a review of all question/answer sets by the supervisor. He states that it is very rare that he needs to correct a response, but on occasion he has done so. It should also be noted that standards are in place for what an email reference response should look like that includes canned phrases that every response is expected to make use of. Librarians also keep on their desktops copies of question/answer sets that are considered good examples to guide them.

As stated above, the question/answer sets are generally discarded instead of being archived, but they are used to feed the frequently asked questions on the library's web site. ERI librarians also keep track of useful electronic resources and maintain an internal website for their own use, where they share these among themselves.

In a discussion of what measures would be useful for managing and evaluating the service the supervisor showed the most interest in categorizing queries. He feels that understanding question type is helpful both for building the reference collection and for training staff. For instance, the ERI gets a lot of genealogy questions, which has meant that the ERI staff has had to become expert in genealogy resources, even though there are genealogy reference librarians in the traditional reference department. Overall however, the volume of questions is so low that such assessments are easy to make in an informal way. The other area of evaluation that interests this group is customer satisfaction data. They have a plan to review instruments other

libraries have created to assess customer satisfaction with email reference and to use these to develop their own email survey instrument.

Marketing

The QuickAnswer! service is only minimally visible on the library's web site. A button labeled QuickAnswers! is provided on the library's home page, but the name of the service is not fully descriptive of what it is. A user could easily assume that quick answers are a list of frequently asked questions or some other librarian prepared finding aid. When this button is selected, the user is taken to another page that explains the QuickAnswers! service and provides links to the web form, the direct email address, a link for searching the internet, as well as the phone number of the call center. So, if the user has not previously book marked the site, he or she has to go down three levels to get to the actual input form. Furthermore, this is the only pathway in. There are no other links to the web form or indications that this service is offered on any of the other library web pages. The QuickAnswer! service is not linked to any other web sites they know of. For instance, the service is not available or advertised on Hillsborough County web sites or through the school district.

Publicity for this service has been undertaken in what are fairly traditional library modes. For instance, it was written up in the library newsletter and a number of bookmarks (5,000 over the 18 months) have been distributed in the library. It is likely that low visibility and minimal publicity may be two reasons why the volume of questions received by this service is so low.

Staffing

The ERI is essentially a call center staffed by five full time librarians and three part time librarians. (One of the part time librarians is an MLS; the other two are library school students. All five full time librarians are professional librarians.) The librarians spend most of their time

on the telephone answering in the area of 9,000-12,000 calls per month. These librarians are also responsible for handling all the email queries that are received. It is easy to see that since email queries come in at the rate of three or four a day, they are not a significant drain on the eight librarians available to field them. The ERI is open the same hours as the branch library.

The original staffing for this service, when it started two years ago, resulted from a reorganization of personnel and not from new hires. As the (phone) service grew the three new librarian positions were created.

Training for new librarians on how to perform email reference has three stages. The first is a two-hour orientation on how to use Pine email and how to format an appropriate email response to a query. New librarians then spend one month observing the work of their peers and reading through all the question/answer sets generated during that time. After one month they begin to pick up a share of the questions and their responses are reviewed by the group and corrected as necessary. The most frequent problem is the tendency to over-answer. Reponses to email queries tend to take from 10 to 40 minutes to complete, although more involved questions have required as much as 1 ½ hours.

Staff performance is measured and evaluated based on the continuous review of their question/answer sets. This review includes an assessment of the completeness of the answer, grammar, spelling, and the tone of the message.

Cost Issues

This service is provided by the public library funded by Hillsborough County. To date no effort has been made calculate the cost of either email or traditional reference services at this library. It follows then that measures of cost effectiveness and the performance of a cost/benefit analysis have not been undertaken either. It is important to note though that increasingly the

county is looking for "business-like results" and that in the next couple of years the library will be faced with the need to provide "program based budgets" to the county in order to receive funding.

In anticipation of the new budget process, the Manager of Service and Performance Quality has started analyzing the workflow in the library and will be in charge of the work of costing out specific programs. This individual was unavailable to meet with the interviewer at the time of the site visit, but Gross will contact her by phone as soon as possible to talk to her about how she is approaching this problem and what she has learned so far on this topic.

Future Plans

There are no current plans to change or significantly enhance the email services provided through the ERI department. There are plans underway to redesign the library's website and the issue of the visibility of the QuickAnswer! service is under discussion. There are also plans to conduct a user satisfaction survey, but these are only at a very early stage and could not be described in much detail.

The most significant potential change on the horizon is the possible provision of chat based reference services as part of the Tampa Bay Library Consortium. These plans are also in the beginning stages (at least 18 months away), but there is movement toward purchase of LSSI software and the shared provision of chat reference by this group of libraries.

Development of Digital Reference and Evaluation Techniques

The two site visits summarized in this report are part of a larger effort being completed by the study team to assess the quality of digital reference service, to produce evaluation tools, and determine how best to integrate evaluation efforts into digital reference services. Additional site visits have been completed which will eventually be summarized and integrated into the report included here. Details about this project can be found at: http://quartz.syr.edu/quality/. Additional information about the study will be provided at the 3rd VRD Conference to be held November 11-13, 2001 in Orlando, http://vrd.org/conferences/VRD2001/.

Clearly, the development of digital reference services is in its infancy. Yet generally, libraries have not developed ongoing evaluation programs to assess use, users, impacts, and costs from such services. As a beginning approach, the study team is considering the development of statistics and performance measures based on the following criteria:

- **Extensiveness**. How much of a service the is provided (e.g., number of users accessing a particular digital reference service, number of digital reference sessions);
- **Efficiency**. The use of resources in providing or accessing digital reference services (e.g., cost per session in providing access to remote users, average number of times users are unable to successfully access the digital reference service);
- **Effectiveness**. How well the digital reference service meets the objectives of the provider or the user (e.g., success rate of identifying and accessing the information needed by the user);
- **Service quality**. How well a service or activity is done (e.g., percentage of transactions in which users acquire the information they need and are "satisfied" with that information);

- **Impact**. How a digital reference service made a difference in some other activity or situation (e.g., the degree to which correct answers enhanced a user's ability to gain employment or pursue business);
- **Usefulness**. The degree to which the digital reference services are useful or appropriate for individual users (e.g., percentage of services of interest to different types of user audiences); and
- **Adoption**. The extent to which institutions or users integrate and adopt digital reference services into organizational or individual activities (e.g., regularly using digital reference services as a normal day-to-day activity).

These types of criteria provide an important roadmap for thinking about the type of data elements and statistics that would be needed to produce such measures, as well as providing a quality measurement framework for library networked services and resources.

As the study progresses specific types of evaluation tools, the study team will develop measures, and statistics. Field testing of these measures and statistics may be done at the two sites discussed in this report. Ultimately, however, the study's final report will provide libraries with a number of strategies and techniques to conduct on-going formative and summative evaluation of digital reference services.